NE-1078

- 17 -

What is claimed is:

1   1.   A video decoding method for decoding a coded picture by

2 using at least one reference picture, wherein said coded picture contains first

3 and second fields and said at least one reference picture exclusively contains

4 a first field, the method comprising:

5   a)   exclusively decoding the first field of the coded picture,

6 whereby the decoded picture contains motion vectors;

7   b)   determining whether the first field of said reference picture or a

8 nonexistent second field of the reference picture is referenced;

9   c)   if the first field of said reference picture is determined to be

10 referenced, performing a motion compensation by using said motion vectors;

11 and

12   d)   if the nonexistent second field of said reference picture is

13 determined to be referenced, correcting said motion vectors so that the

14 corrected motion vectors extend from the first field of said reference picture

15 to said decoded first field and performing a motion compensation by using

16 the corrected motion vectors.

1   2.   A video decoding method for decoding a coded picture by

2 using at least one reference picture, wherein said coded picture contains first

3 and second fields and said at least one reference picture exclusively contains

4 a first field, the method comprising:

5   a)   exclusively decoding the first field of the coded picture,

6 whereby the decoded picture contains motion vectors;

7   b)   determining whether field estimation or frame estimation is to

8 be used for motion compensation;

9   c)   if the field estimation is determined to be used, determining

NE-1078

- 18 -

10   whether the first field of said reference picture or a nonexistent second field

11   of the reference picture is referenced;

12   d)   if the first field of said reference picture is determined to be

13   referenced, performing a motion compensation by using said motion vectors;

14   e)   if the nonexistent second field of said reference picture is

15   determined to be referenced, correcting said motion vectors so that the

16   corrected motion vectors extend from the first field of said reference picture

17   to said decoded first field and performing a motion compensation by using

18   the corrected motion vectors; and

19   f)   if the frame estimation is determined by step (c) to be used,

20   calculating average values of successive lines of the first field of said

21   reference picture, calculating motion vectors using the average values and

22   performing a motion compensation by using the calculated motion vectors.

1   3.   A video decoding method for decoding a coded picture by

2   using at least one reference picture, wherein said coded picture contains first

3   and second fields and is structured as field picture or frame picture, and said

4   at least one reference picture exclusively contains a first field, the method

5   comprising the steps of:

6   a)   exclusively decoding the first field of the coded picture,

7   whereby the decoded picture contains motion vectors;

8   b)   determining whether the decoded first field is structured as

9   field picture or as frame picture;

10   c)   if the decoded first field is determined to be structured as field

11   picture, determining whether the first field of said reference picture or a

12   nonexistent second field of the reference picture is referenced;

13   d)   if the first field of said reference picture is determined to be

14   referenced, performing motion compensation on said decoded first field;

NE-1078

- 19 -

15　　e)　if the nonexistent second field of said reference picture is

16　determined to be referenced, correcting said motion vectors so that the

17　corrected motion vectors extend from the first field of said reference picture

18　to said decoded first field and performing a motion compensation by using

19　the corrected motion vectors;

20　　f)　if the decoded first field is determined to be structured as frame

21　picture, determining whether field estimation or frame estimation is to be

22　used; and

23　　g)　if the field estimation is determined to be used, repeating steps

24　(d) and (e), and if the frame estimation is determined to be used, calculating

25　average values of successive lines of the first field of said reference picture,

26　calculating motion vectors using the average values and performing a motion

27　compensation by using the calculated motion vectors.

1　　4.　An apparatus for decoding a coded picture by using at least one

2　reference picture, wherein said coded picture contains first and second fields

3　and said at least one reference picture exclusively contains a first field, the

4　apparatus comprising:

5　　decoding circuitry for exclusively decoding the first field of the coded

6　picture, whereby motion vectors are decoded;

7　　motion compensation circuitry;

8　　motion vector correction circuitry; and

9　　control circuitry for causing said motion compensation circuitry to

10　perform a motion compensation by using the decoded motion vectors if the

11　first field of said reference picture is referenced,

12　　said control circuitry causing said motion vector correction circuitry to

13　correct said motion vectors so that the corrected vectors extend from the first

14　field of said reference picture to said decoded first field and causing said

NE-1078

- 20 -

15　motion compensation circuitry to perform a motion compensation by using

16　the corrected motion vectors if the nonexistent second field of said reference

17　picture is referenced.

1　　　5.　　An apparatus for decoding a coded picture by using at least one

2　reference picture, wherein said coded picture contains first and second fields,

3　and said at least one reference picture exclusively contains a first field, the

4　apparatus comprising:

5　　　decoding circuitry for exclusively decoding the first field of the coded

6　picture whereby motion vectors are decoded;

7　　　motion compensation circuitry;

8　　　motion vector correction circuitry;

9　　　averaging circuitry; and

10　　control circuitry for causing said motion compensation circuitry to

11　perform a motion compensation by using the decoded motion vectors if the

12　first field of said reference picture is referenced,

13　　said control circuitry causing said motion vector correction circuitry to

14　correct said decoded motion vectors so that the corrected vectors extend from

15　the first field of said reference picture to said decoded first field and causing

16　said motion compensation circuitry to perform a motion compensation by

17　using the corrected motion vectors, if the nonexistent second field of said

18　reference picture is determined to be referenced,

19　　said control circuitry causing said averaging circuitry to calculate

20　average values of successive lines of the first field of said reference picture,

21　causing said motion vector correction circuitry to correct said decoded

22　motion vectors by using the average values and causing said motion

23　compensation circuitry to perform a motion compensation by using the

24　corrected motion vectors, if frame estimation is used.

NF-1078

- 21 -

1 6. The apparatus of claim 5, wherein said control circuitry causes
2 said averaging circuitry to calculate said average values if the decoded field is
3 structured as frame picture.

1 7. A computer-readable storage medium containing instruction
2 data for decoding a coded picture by using at least one reference picture,
3 wherein said coded picture contains first and second fields and said at least
4 one reference picture exclusively contains a first field, the instruction data
5 comprising the instructions of:
6   a) exclusively decoding the first field of the coded picture,
7 whereby motion vectors are decode;
8   b) determining whether the first field of said reference picture or a
9 nonexistent second field of the reference picture is referenced;
10   c) if the first field of said reference picture is determined to be
11 referenced, performing motion compensation by using said decoded motion
12 vectors; and
13   d) if the nonexistent second field of said reference picture is
14 determined to be referenced, correcting said motion vectors so that the
15 corrected vectors extend from the first field of said reference picture to said
16 decoded first field and performing a motion compensation by using the
17 corrected motion vectors.

1 8. A computer-readable storage medium containing instruction
2 data for decoding a coded picture by using at least one reference picture,
3 wherein said coded picture contains first and second fields and said at least
4 one reference picture exclusively contains a first field, the instruction data
5 comprising the instructions of:
6   a) exclusively decoding the first field of the coded picture,

NE-1078

- 22 -

7　whereby motion vectors are decoded;

8　　　　b)　determining whether field estimation or frame estimation is to

9　be used for motion compensation;

10　　　　c)　if the field estimation is determined to be used, determining

11　whether the first field of said reference picture or a nonexistent second field

12　of the reference picture is referenced;

13　　　　d)　if the first field of said reference picture is determined to be

14　referenced, performing a motion compensation by using the decoded motion

15　vectors;

16　　　　e)　if the nonexistent second field of said reference picture is

17　determined to be referenced, correcting said decoded motion vectors so that

18　the corrected vectors extend from the first field of said reference picture to

19　said decoded first field and performing a motion compensation by using the

20　corrected motion vectors; and

21　　　　f)　if the frame estimation is determined to be used, calculating

22　average values of successive lines of the first field of said reference picture,

23　correcting the decoded motion vectors by using the average values and

24　performing a motion compensation by using the corrected motion vectors.

1　　　　9.　A computer-readable storage medium containing instruction

2　data for decoding a coded picture by using at least one reference picture,

3　wherein said coded picture contains first and second fields and is structured

4　as field picture or frame picture, said at least one reference picture exclusively

5　contains a first field, the instruction data comprising the instructions of:

6　　　　a)　exclusively decoding the first field of the coded picture,

7　whereby motion vectors are decoded;

8　　　　b)　determining whether the decoded first field is structured as

9　field picture or as frame picture;

NE-1078

- 23 -

10   c)   if the decoded first field is determined to be structured as field

11   picture, determining whether the first field of said reference picture or a

12   nonexistent second field of the reference picture is to be referenced;

13   d)   if the first field of said reference picture is determined to be

14   referenced, performing a motion compensation by using the decoded motion

15   vectors;

16   e)   if the nonexistent second field of said reference picture is

17   determined to be referenced, correcting the decoded motion vectors so that

18   the corrected vectors extend from the first field of the reference picture to said

19   decoded first field and performing a motion compensation by using the

20   corrected motion vectors;

21   f)   if the decoded first field is determined to be structured as frame

22   picture, determining whether field estimation or frame estimation is to be

23   used for motion compensation; and

24   g)   if the field estimation is determined to be used for motion

25   compensation, repeating the instructions (d) and (e), and if the frame

26   estimation is determined to be used, calculating average values of successive

27   lines of the first field of said reference picture, correcting the decoded motion

28   vectors by using the average values and performing a motion compensation

29   by using the corrected motion vectors.